

Application No. 09/435,748

AMENDMENTS TO THE CLAIMS

A detailed listing of all claims that are, or were, in the present application, irrespective of whether the claim(s) remains under examination in the application are presented below. The claims are presented in ascending order and each includes one status identifier. Those claims not cancelled or withdrawn but amended by the current amendment utilize the following notations for amendment: 1. deleted matter is shown by strikethrough for six or more characters and double brackets for five or less characters; and 2. added matter is shown by underlining.

1-28. (Canceled).

29. (Previously Presented) A battery comprising:
a positive electrode;
a negative electrode; and a
separator between the positive and negative electrode, wherein at least one of the electrodes has an average thickness less than about 9.5 microns and comprises a powder, the powder comprising electroactive particles having an average primary particle diameter less than about 500 nm.

30. (Currently Amended) The battery of claim 29 wherein the positive electrode has an average thickness less than [[10]] 9.5 microns and comprises electroactive particles having an average primary particle diameter less than about 500 nm.

Application No. 09/435,748

31. (Currently Amended) The battery of claim 29 wherein the negative electrode has an average thickness less than [[10]] 9.5 microns and comprises electroactive particles having an average primary particle diameter less than about 500 nm.
32. (Currently Amended) The battery of claim 29 wherein both the negative electrode and the positive electrode have an average thickness less than [[10]] 9.5 microns and comprises electroactive particles having an average primary particle diameter less than about 500 nm.
33. (Original) The battery of claim 29 wherein the separator has a thickness less than about 10 microns.
34. (Previously Presented) The battery of claim 29 wherein the negative electrode comprises a lithium intercalation compound.
35. (Original) The battery of claim 29 wherein the negative electrode comprises lithium metal or a lithium alloy.
36. (Original) The battery of claim 29 wherein the negative electrode comprises tin oxide or derivatives thereof.
37. (Original) The battery of claim 29 wherein at least one of the electrodes comprises electroactive particles having an average diameter less than about 100 nm.
38. (Previously Presented) The battery of claim 29 wherein the positive electrode comprises a composition selected from the group consisting of vanadium oxide, silver vanadium

Application No. 09/435,748

oxide, manganese oxide, lithium manganese oxide, lithium titanium oxide, lithium cobalt oxide, lithium nickel oxide, iron sulfides, molybdenum sulfide and mixtures, composites and derivatives thereof.

39. (Original) The battery of claim 29 wherein the separator comprises a polymer.
40. (Original) The battery of claim 29 wherein the separator comprises a nonliquid electrolyte comprising a lithium compound between the positive electrode and the negative electrode.
41. (Original) The battery of claim 29 further comprising a current collector in electrical contact with the positive electrode, the current collector comprising aluminum metal, copper metal or stainless steel metal.
42. (Original) The battery of claim 41 wherein the current collector is a foil or an expanded mesh.
43. (Original) The battery of claim 29 further comprising a current collector in electrical contact with the negative electrode, the current collector comprising aluminum metal, copper metal or stainless steel metal.
44. (Original) The battery of claim 29 further comprising a current collector comprising graphite paper, the current collector being in electrical contact with the positive electrode or the negative electrode.

Application No. 09/435,748

45-51. (Canceled).

52. (Previously Presented) The battery of claim 29 wherein the surface of at least one of the electrodes at the separator has a root mean square surface roughness less than about 5 microns.

53. (Previously Presented) The battery of claim 29 wherein the electrodes comprise supplementary electrically conductive particles.

54. (Previously Presented) The battery of claim 29 wherein at least one electrode has effectively no electroactive particles with a diameter greater than about four times the average diameter of the collection of electroactive particles.

55-57. (Canceled).

58. (Previously Presented) The battery of claim 29 wherein the at least one electrode further comprises a binder.

59. (Previously Presented) A battery comprising:
a positive electrode;
a negative electrode;
a separator between the positive and the negative electrode, wherein at least one of the electrodes has an average thickness less than about 9.5 microns and comprises a binder and electroactive particles having an average primary particle diameter less than about 500 nm.

Application No. 09/435,748

60. (Previously Presented) The battery of claim 59 wherein the positive electrode has an average thickness less than 10 microns and comprises electroactive particles having an average primary particle diameter less than about 500 nm.
61. (Previously Presented) The battery of claim 59 wherein the negative electrode has an average thickness less than 10 microns and comprises electroactive particles having an average primary particle diameter less than about 500 nm.
62. (Previously Presented) The battery of claim 59 wherein both the negative electrode and the positive electrode have an average thickness less than 10 microns and comprises electroactive particles having an average primary particle diameter less than about 500 nm.
63. (Previously Presented) The battery of claim 59 wherein the separator has a thickness less than about 10 microns.
64. (Previously Presented) The battery of claim 59 wherein the negative electrode comprises a lithium intercalation compound.
65. (Previously Presented) The battery of claim 59 wherein the negative electrode comprises lithium metal or a lithium alloy.
66. (Previously Presented) The battery of claim 59 wherein the negative electrode comprises tin oxide or derivatives thereof.

Application No. 09/435,748

67. (Previously Presented) The battery of claim 59 wherein at least one of the electrodes comprises electroactive particles having an average diameter less than about 100 nm.

68. (Previously Presented) The battery of claim 59 wherein the positive electrode comprises a composition selected from the group consisting of vanadium oxide, silver vanadium oxide, manganese oxide, lithium manganese oxide, lithium titanium oxide, lithium cobalt oxide, lithium nickel oxide, iron sulfides, molybdenum sulfide and mixtures, composites and derivatives thereof.

69. (Previously Presented) The battery of claim 59 wherein the separator comprises a polymer.

70. (Previously Presented) The battery of claim 59 wherein the separator comprises a nonliquid electrolyte comprising a lithium compound between the positive electrode and the negative electrode.

71. (Previously Presented) The battery of claim 59 further comprising a current collector in electrical contact with the positive electrode, the current collector comprising aluminum metal, copper metal or stainless steel metal.

72. (Previously Presented) The battery of claim 71 wherein the current collector is a foil or an expanded mesh.

Application No. 09/435,748

73. (Previously Presented) The battery of claim 59 further comprising a current collector in electrical contact with the negative electrode, the current collector comprising aluminum metal, copper metal or stainless steel metal.

74. (Previously Presented) The battery of claim 59 further comprising a current collector comprising graphite paper, the current collector being in electrical contact with the positive electrode or the negative electrode.

75. (Previously Presented) The battery of claim 59 wherein the surface of at least one of the electrodes at the separator has a root mean square surface roughness less than about 5 microns.

76. (Previously Presented) The battery of claim 59 wherein the electrodes comprise supplementary electrically conductive particles.

77. (Previously Presented) The battery of claim 59 wherein at least one electrode has effectively no electroactive particles with a diameter greater than about four times the average diameter of the collection of electroactive particles.

78. (Previously Presented) The battery of claim 29 wherein at least one of the electrodes has an average thickness less than about 5 microns.

79. (Previously Presented) The battery of claim 29 wherein at least one of the electrodes has an average thickness from about 250 nm to about 2.5 microns.

Application No. 09/435,748

80. (Previously Presented) The battery of claim 29 wherein at least one of the electrodes has an average thickness from about 300 nm to about 1 micron.

81. (Previously Presented) The battery of claim 59 wherein at least one of the electrodes has an average thickness less than about 5 microns.

82. (Previously Presented) The battery of claim 59 wherein at least one of the electrodes has an average thickness from about 250 nm to about 2.5 microns.

83. (Previously Presented) The battery of claim 59 wherein at least one of the electrodes has an average thickness from about 300 nm to about 1 micron.

84. (Previously Presented) A battery comprising:
a positive electrode;
a negative electrode;
at least one current collector; and a
separator between the positive and negative electrode, wherein at least one of the electrodes has an average thickness less than about 10 microns and wherein the at least one current collector has an average thickness less than about 4.5 microns.

85. (Previously Presented) The battery of claim 84 wherein at least one of the electrodes has an average thickness less than about 9.5 microns.

Application No. 09/435,748

86. (Previously Presented) The battery of claim 84 wherein the positive electrode has an average thickness less than 5 microns and comprises electroactive particles having an average primary particle diameter less than about 500 nm.

87. (Previously Presented) The battery of claim 84 wherein the negative electrode has an average thickness less than 5 microns and comprises electroactive particles having an average primary particle diameter less than about 500 nm.

88. (Previously Presented) The battery of claim 84 wherein the at least one current collector has an average thickness less than about 2.5 microns.

89. (Previously Presented) The battery of claim 84 wherein the at least one current collector has an average thickness from about 0.25 microns to about 1 micron.